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BASIC AMERICAN FOODS

September 29, 2006

Messrs Mike Simon and Zach Klotovich Idaho Department of Environmental Quality 1410 North Hilton Boise, Idaho 83706-1255

RE: Compliance Assurance Monitoring Design - Kipper Boiler Rexburg Facility of Basic American Foods

Dear Messrs. Simon and Klotovich,

Basic American Foods (BAF) is transmitting with this letter a *Compliance Assurance Monitoring Design* for the Kipper Boiler at the Rexburg Facility of BAF. This document describes the monitoring design criteria and procedures BAF will use to comply with Compliance Assurance Monitoring (CAM) requirements for the Kipper Boiler, and documents the conformance of these criteria and procedures to the requirements of 40 CFR 64.3. This document is submitted In accordance with Permit Condition 3.7 of Basic American Foods' (BAF's) Tier I Operating Permit No. 065-00008 for its Rexburg Facility.

If you have any question regarding this submittal, please contact me at 208-785-8590

Regards, Aruce Wright

Bruce wright

Sr. Project Mgr - Environmental

Certification by Responsible Official:

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I, Nelson Rovig, certify based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Signature:

_ _ _

Date: 10 Z C

Nelson Rovig

Director, Idaho-Operations, Basic American Foods

Cc: Coal Creek Environmental Associates – Stephen Nelson Idaho Falls Regional Office of DEQ - Mr. Rensay Owen

COMPLIANCE ASSURANCE MONITORING DESIGN KIPPER BOILER, REXBURG FACILITY OF BASIC AMERICAN FOODS

In accordance with Permit Condition 3.7 of Basic American Foods' (BAF's) Tier I Operating Permit No. 065-00008 for its Rexburg Facility, BAF must submit monitoring data for a Zurn mechanical dust collector and a Riley Ventri-Rod® scrubber, control devices associated with the Kipper Boiler. The monitoring design must meet the requirement of 40 CFR 64.3 (Compliance Assurance Monitoring, Monitoring Design Criteria).

This document describes the monitoring design criteria and procedures BAF will use to comply with Compliance Assurance Monitoring (CAM) requirements for the Kipper Boiler, and documents the conformance of these criteria and procedures to 40 CFR 64.3. This Monitoring Design incorporates data collected during various performance tests of the Kipper Boiler, including monitoring conducted on September 6, 2006 specifically to assist in preparing this Compliance Assurance Monitoring Design.

1. BACKGROUND

DESCRIPTION OF KIPPER BOILER

The Kipper Boiler is a 60,000 lb/hr boiler (nameplate rating) providing process steam to the Rexburg Facility. The Kipper Boiler is fired by wood waste and is also permitted to fire wood-coal mixtures with coal up to 39% of the total weight of fuel (equivalent to 50 per cent of the Kipper Boiler heat input rate). The normal steaming rate range for the Kipper Boiler is about 40,000 to 60,000 lbs steam/hour.

Currently the Kipper Boiler is fired only with wood waste. Accordingly this Monitoring Design will be based solely on wood firing. When BAF commences coal co-firing, additional measures for complying with the CAM rule (by either submitting required monitoring or demonstrating exempt status) may be required.

EMISSIONS CONTROLS

To control particulate emissions, the Kipper Boiler uses multi-clones (Zurn type MTSA-60-9 CYT-STD-XT multiclone with 112 tubes) with fly ash reinjection and a Ventri-Rod® wet scrubber (Riley Model A-33-34,000). Details of these emissions

controls are presented in the Application for Permit to Construct for the Kipper Boiler.¹

For both the multi-clone and the wet scrubber, the pressure drop across the units is entirely a function of the air flow rate across the units; the devices have no controls or equipment to independently adjust pressure drop. The air flow rate through the Kipper Boiler is established by the operation of the Kipper Boiler forced-draft (F.D.) and Induced-draft (I.D.) fans, the operations of which are governed by maintaining proper combustion conditions in the Kipper Boiler combustion chamber. The F.D. fan forces combustion air into the firebox at a rate that corresponds to the in-feed rate of fuel. The I.D. fan draws air from the firebox and responds to changes in the air-flow rate by maintaining the firebox at a preset slightly negative operating pressure.

The scrubber water flow rate is fixed. The scrubber feed water pump maintains a specified feed water pressure, which establishes a pressure drop across the spray nozzles. The total flow rate is thus established by the discharge characteristics of the nozzle. Each nozzle is of identical design.

Scrubber water that collects in the bottom of the scrubber is drained continuously to a settling pond on site. Supernatant from the settling pond is recirculated back to the scrubber sprays. Fresh water is also added at the back section of the scrubber (the demister section). The fresh water combines with the flow to the settling pond and serves as make-up water. BAF has attempted to install flow meters on the scrubber water feed line to the spray nozzles to directly monitor scrubber water flow rate, but excessive electrical noise in the Boilerhouse has prevented sonic meters from operating successfully, and the solids content in the scrubber feed water interferes with operation of other meters. Thus, BAF monitors scrubber water pressure as a surrogate to assure an adequate water supply to the scrubber sprays.

Since the original installation of the scrubber, BAF has modified the scrubber to increase the number of spray nozzles (from four to nine) and to feed the spray nozzles from both sides of the scrubber (The original design fed the nozzles from only one side of the scrubber.) These changes, which were made to reduce the rate of solids buildup in the scrubber, increased the uniformity of water spray coverage within the scrubber while decreasing scrubber water pressure somewhat compared to the original operating conditions. Because scrubber efficiency depends on intimate contact between the boiler exhaust air stream and the scrubbing media, these changes enhanced the scrubber performance while also reducing solids accumulations in the scrubber.

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¹ AMPCO Foods, Inc., "Application to Idaho Division of Environment to Construct and Operate One 60,000 Pounds Per Hour Wood and Wood-Coal Mixed Fired Boiler at the Rexburg Plant, Rogers Division of American Potato Company", July 3, 1980.

The current operating ranges, compared to the original manufacturer specifications, are summarized below:

| Control Device | Operating Parameter | Typical Range of Operating Conditions | Manufacturer Specification or Recommendation |
|----------------|----------------------------|---|--|
| Multi-clone | Pressure drop | 1.2-2.1" W.C. | 1.85" ≯ 2.5" W.C. |
| Wet scrubber | Pressure drop | 6-7.6" W.C. | 7" W. C. |
| Wet Scrubber | Scrubber water pressure | 5 psig (using 9 nozzle configuration) | 10-15 psig (based on 4 nozzle configuration) |

EMISSION MEASUREMENTS

Emission measurements from the Kipper Boiler have been completed on various occasions since the Kipper Boiler was installed. Most recently, emissions from the Kipper Boiler were measured on September 6, 2006, in conformance with a test protocol approved by DEQ. This protocol was developed specifically to provide monitoring data in support of this compliance assurance monitoring design. This protocol included conducting emission measurements for PM, condensable PM, CO, and opacity while operating the Kipper Boiler at low (40,000 lb/hr) and high (60,000 lb/hr) target steaming rates. Simultaneous with the performance testing, data were collected on operating parameters for emissions control devices provided for the Kipper Boiler.

UNCONTROLLED AND CONTROLLED EMISSIONS

Estimated uncontrolled and controlled emissions of carbon monoxide and particulate matter are summarized below. These estimates are based on firing of the Kipper Boiler at 60,000 lb/hr steaming rate for 8760 hours per year.

| Potential Emission | Carbon Monoxide, tpy | Particulate Matter, tpy |
|--------------------|----------------------|-------------------------|
| Uncontrolled | 2442 | 220³ |

² Based on 0.927 lb CO/klb steam generated. This emission factor is based on 1994 source emission measurements. CO emission measurements conducted in September 2006 indicate that actual CO emissions may be significantly less than the amounts indicated by the 1994 measurements.

³ Based on AP-42 emission factor of 0.56 lb filterable PM/MMBtu for bark and wet wood and assuming 1500 Btu/lb of steam.

PROPOSED COMPLIANCE ASSURANCE MONITORING DESIGN CRITERIA-KIPPER BOILER, REXBURG FACILITY OF BASIC AMERICAN FOODS

| Potential Emission | Carbon Monoxide, tpy | Particulate Matter, tpy |
|--------------------|----------------------|-------------------------|
| Controlled | 244 | 73 |

CO and PM are the only regulated air pollutants of concern for purposes of 40 CFR 64. All other regulated air pollutants have uncontrolled emissions that are less than 100 tons per year and do not have applicable emissions limits.

VERIFICATION OF APPLICABILITY OF CAM RULE TO KIPPER BOILER

40 CFR Part 64.2(a) contains three criteria that must be met for an emissions unit to be subject to the CAM rule. All three criteria must be met, and applicability is considered separately for each regulated air pollutant. Applicability of each of these criteria is summarized below:

- (1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under paragraph (b)(1) of this section;
 - For the Kipper Boiler, particulate matter emissions to the atmosphere may not exceed 0.080 gr/dscf of effluent gas corrected to 8% oxygen by volume for wood product fuel in accordance with IDAPA 58.01.01.676-677. These are the only emission limits or standards applicable to the Kipper Boiler.
- (2) The unit uses a control device to achieve compliance with any such emission limitation or standard
 - The Kipper Boiler uses a Zurn multi-clone and a Ventri-Rod® wet scrubber to achieve compliance with both the particulate standard and the opacity standard. There are no emissions controls for carbon monoxide, nor is there an applicable emission limit for carbon monoxide.
- (3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. For purposes of this paragraph, "potential pre-control device emissions" shall have the same meaning as "potential to emit," as defined in § 64.1, except that emission reductions achieved by the applicable control device shall not be taken into account.

For both carbon monoxide and particulate matter, 100 tons per year is the emission level required for a source to be classified as a major source under 40 CFR Part 70 or Part 71. Pre-control emissions of both carbon monoxide and particulate matter exceed 100 tons per year.

Based on the above criteria, the Kipper Boiler is subject to the CAM Rule for emissions of particulate matter. The Kipper Boiler is not subject to the CAM rule for

carbon monoxide or condensable PM because there are no controls for carbon monoxide and there are no applicable emission limits for carbon monoxide or condensable PM.

2. PROPOSED COMPLIANCE ASSURANCE MONITORING PROGRAM

40 CFR 64.4(c)(1) requires that BAF submit emissions control device operating parameter data obtained during the conduct of the applicable compliance or performance test under conditions specified by the applicable rule. Compliance of BAF's monitoring program with this requirement is described below.

EMISSIONS CONTROL PERFORMANCE MONITORING

On September 6, 2006 BAF measured emissions from the Kipper Boiler at high and low firing rates. The high firing rate condition was conducted at a target steaming rate of 60,000 lbs steam/hour, which is the Kipper Boiler nameplate rating. The low firing rate condition was conducted at a target steaming rate of 40,000 lbs steam/hour, which is the approximate lower bound for steam production from the Kipper Boiler.

At each of these firing conditions, performance testing was conducted for particulate matter, condensable particulate matter, and opacity (EPA Methods 5/202 and 9, respectively). During each performance test, the following control device operating parameters were monitored:

- Multi-clone pressure drop
- Scrubber pressure drop
- Scrubber water pressure
- Scrubber makeup water flow rate.

The results of the source emissions measurements have been provided to DEQ under separate cover.⁴

EMISSIONS CONTROL DEVICE OPERATING PARAMETERS

Based on the characteristics of emissions control devices and the data obtained from the emissions control performance monitoring, BAF has identified emissions control indicator ranges and designated conditions appropriate to ensure compliance with particulate and opacity limits. BAF's proposed emissions control indicator ranges and/or designated conditions are presented below.

⁴ Horizon Engineering, Portland, OR. Source Evaluation Report, Basic American Foods, Rexburg, Idaho, Kipper Hogged Fuel Boiler, Particulate Matter, Opacity, and C), September 6, 2006

Boiler Steaming Rate

As discussed previously, emissions control performance monitoring was conducted at target steaming rates of 40,000 lb/hr and 60,000 lb/hr. These firing rates are approximate low and high boiler firing rate conditions; the Kipper Boiler can operate at steaming rates somewhat higher or lower than those conditions. Because emissions from the Kipper Boiler were well below emission limits at both the high and low steaming rates, the effective Boiler steaming rate operating range for the emissions control indicator ranges and designated conditions is 35,000 lb/hr to 65,000 lb/hr.

Multi-clone Pressure Drop

Pressure drop across the multi-clone is an indicator of energy expended in creating cyclonic flow inside the collection cyclones.

Minimum pressure drop across multi-clone

The pressure drop across the cyclones is a function of Kipper Boiler exhaust air flow, which, in turn, is directly related to Kipper Boiler steaming rates. Thus, minimum pressure drop across the multi-clone should increase with steaming rate. Control requirements for minimum pressure drop across the multiclone are established at 80 percent of the pressure recorded during the emissions control performance monitoring.

| Steaming Rate, Ib/hr | Minimum Multi-clone Pressure Drop Recorded During Emissions Control Performance Monitoring, Inches of Water | Control Point for Minimum Multi-clone Pressure Drop, Inches of Water |
|----------------------------|---|--|
| 40,000 | 1.2 | 0.96 |
| 60,000 | 1.8 | 1.44 |

Figure 1 shows the minimum acceptable pressure drop across the 35,000 to 65,000 lbs/hr steaming rate range of the Kipper Boiler.

Scrubber Pressure Drop

Pressure drop across the scrubber is an indicator of energy expended in creating turbulence inside the scrubber, which is an important component of scrubber performance.

Minimum pressure drop across scrubber

The pressure drop across the scrubber is a function of air flow, which, in turn, is directly related to Kipper Boiler steaming rates. Thus, minimum pressure drop across the multi-clone should increase with steaming rate. During the emissions control performance monitoring, however, the average pressure drop across the scrubber was 7.0 inches of water at both high and low firing rates. This indicates that under current physical arrangements, the scrubber pressure drop is not sensitive to steaming rates. Accordingly, minimum scrubber pressure drop is established at 5.6 inches of water, which is 80 percent of the pressure recorded during the emissions control performance monitoring.

Scrubber Water Pressure

Water flow through the scrubber is an important parameter for scrubber efficiency. As discussed previously, however, there is presently no practical way of directly measuring scrubber water flow.

In lieu of measuring scrubber water flow, BAF monitors scrubber water pressure. The scrubber feed water pump maintains a specified feed water pressure, which is equivalent to the pressure drop across the spray nozzles. Because each nozzle is of identical design, the scrubber water flow rate is determined by the pressure drop as long as the nozzle discharge characteristics remain unchanged.

Minimum scrubber water pressure

Because scrubber water flow is a function of scrubber water pressure, low scrubber water pressure indicates low scrubber water flow. During the emissions control performance monitoring, the scrubber water pressure was a constant 5 psig during all runs. Accordingly, minimum scrubber pressure drop is established at 4.0 psig, which is 80 percent of the scrubber water pressure recorded during the emissions control performance monitoring.

Maximum scrubber water pressure

Under the current design, a scrubber water pressure exceeding 10 psig indicates a physical obstruction of the scrubber spray nozzles. BAF responds to excess scrubber water pressure by shutting down the Kipper Boiler and cleaning the affected nozzle(s).

Currently scrubber water is pumped from the settling pond (on the other side of the production plant) directly to the scrubber spray nozzles. BAF is considering simplifying the scrubber water supply system by installing a local recirculating pump loop with a strainer to remove large suspended solids that are associated with nozzle plugging. If this project is completed, high pressure will merely indicate that more water is being delivered to the sprays (which is a condition that enhances particulate removal).

Regardless of scrubber water pressure, BAF will provide quarterly inspection and cleaning of nozzles. All deposits from nozzles will be removed, and the physical condition of the nozzles will be inspected. Damaged nozzles will be replaced with identical new or repaired nozzles.

EMISSIONS CONTROL INDICATOR RANGES AND DESIGNATED CONDITIONS

Boiler Steaming Rate

BAF will operate the Kipper Boiler at a nominal steaming rate between 35,000 lbs/hr and 65,000 lbs/hr. BAF will not operate the Kipper Boiler at a steaming rate exceeding 65,000 lb/hr, nor operate at a steaming rate less than 35,000 lbs/hr except under conditions of startup, shutdown, or malfunction. When a malfunction occurs, BAF will investigate and either repair the malfunction or, as soon as is practicable, shut down the Kipper Boiler and effect repairs.

Scrubber Water Pressure

BAF will maintain a minimum water pressure to the scrubber spray nozzles of 4.0 psig at all times. If the water pressure falls below 4.0 psig, BAF's operator will investigate to determine the cause. If the cause can be immediately corrected, BAF will do so. If the cause cannot be immediately corrected, BAF will convert to supply fresh water to the scrubber sprays until repairs can be made. If neither of these solutions will restore the water pressure, BAF will notify Production that the Kipper Boiler must be shut down until repairs can be made. The Kipper Boiler will be shut down as soon thereafter as is practicable and the repairs will be made.

BAF will maintain the scrubber water pressure at less than 10 psig until such time as it installs a local recirculating loop and/or a self-cleaning strainer. Until that project is completed, if the scrubber water pressure increases to 10 psig, the operator will notify Production that the Kipper Boiler must be shut down until repairs can be made. The Kipper Boiler will be shut down as soon thereafter as is practicable and the repairs will be made.

Another exception to the maximum allowable pressure might also be appropriate. The pump to the scrubber sprays has worn volutes and may not be pumping at its design capacity. Affecting repairs may increase the pumping pressure without indicating a plugged nozzle condition. If BAF observes a pressure increase after repairing the pump, we will notify DEQ of the new maximum operating pressure in writing.

Multi-clone and Scrubber Pressure Drop

As stated above, these parameters are governed by maintaining proper combustion conditions in the Kipper Boiler combustion chamber. The multi-clones and scrubber have no separate controls to independently adjust these parameters. Further, excursions of pressure drop outside the ranges specified above do not mean that an excess emission has occurred; rather such excursions indicate the need for follow-up investigative action.

If the pressure drop through the multi-clones or scrubber falls below the minimum values specified in this plan, the operator will investigate to determine if a malfunction has occurred in the emission controls (See Emission Control System Malfunction, below). If a malfunction has occurred and is one that can be immediately corrected, the operator will do so. If a malfunction has occurred and repairs cannot be immediately corrected, the operator will notify Production that the Kipper Boiler must be shut down for repairs. The Kipper Boiler will be shut down as soon thereafter as is practicable and the repairs will be made.

Emission Control System Malfunction

Aside from a loss of water pressure to the scrubber or a high water-pressure condition that indicates spray-nozzle obstruction, the first indication of a problem with the emission control equipment is that the I.D. fan loses its ability to maintain the firebox at a slightly negative operating pressure. When this happens, the Kipper Boiler discharges smoke inside the Kipper Boiler building, a condition that is immediately apparent to the operator.

The inability of the induced-draft fan to maintain a negative operating condition in the fire-box can be caused by several conditions.

- The Kipper Boiler may have a blown tube. This condition has nothing to do
 with the operation of the emission controls, but rather allows steam to be
 injected directly into the combustion chamber. When this happens, the
 Kipper Boiler must be shut down and either the hole is welded closed or the
 tube is plugged.
- The I.D. fan may have lost power. Under this condition, if power cannot be immediately restored, the Kipper Boiler is shut down until repairs can be made.
- The multi-clone discharge hopper may have become plugged. The operator will check the valve at the bottom of the multi-clone discharge hopper to verify that the valve is operating. If the valve is not operating, the operator will attempt to reset the valve. If the operator is unable to reset the valve, the Kipper Boiler will be shut down until repairs can be made.

If the valve is operating, the operator will next check to see if the discharge hopper is emptying properly. If the discharge hopper contains an excessive accumulation of collected particulate matter, the operator will assess whether the accumulation is due to bridging that can be "poked through" to dislodge the material. If the accumulated solids can be dislodged to flow properly into the discharge hopper, the operator will do so. If the accumulated solids cannot be dislodged adequately, the operator will notify Production that the Kipper Boiler must be shut down for cleanup. As soon thereafter as is practicable, the Kipper Boiler is shut down and the blockage is removed.

• If the I.D. fan is operating properly and the multi-clone discharge hopper has not plugged, the operator will check to see if the scrubber is plugged. If the scrubber is plugged, the operator will notify Production that the Kipper Boiler must be shut down. As soon thereafter as is practicable, the Kipper Boiler is shut down and the scrubber is cleaned out, repaired, and inspected.

3. CONSISTENCY OF PROPOSED MONITORING DESIGN WITH 40 CFR 64 MONITORING DESIGN CRITERIA

This section reviews the consistency of BAF's monitoring design with the Monitoring Design Criteria of 40 CFR 64.3

GENERAL CRITERIA - 40 CFR 60.43(A)

40 CFR 64.3(a)(1) – Indicators of emission control performance for the control device

Multi-clone.

Pressure drop across multiclone is the recognized operating critical parameter for a multi-clone. The proposed monitoring program includes criteria for multi-clone pressure drop

Scrubber

The critical operating parameters for a wet scrubber are pressure drop and scrubber water flow rate. Because the scrubber is not being used for removal of gaseous pollutants, scrubber water pH is not a required parameter.

BAF's monitoring program includes criteria for scrubber pressure drop. However, it is infeasible to measure scrubber water flow rate. BAF has previously installed mag meters and sonic meters on the scrubber water supply line, but the solids content of water and electronic noise in the Boilerhouse have made these devices unreliable.

In lieu of monitoring scrubber water flow rate, BAF monitors scrubber water pressure. With a fixed number of nozzles of identical design, scrubber water flow is a direct function of scrubber water pressure as long as nozzle discharge conditions remain constant. To ensure consistency in nozzle discharge, BAF will provide quarterly maintenance and cleaning of nozzles to ensure consistent flow conditions.

<u>40 CFR 64.3(a)(2) – Establishing appropriate ranges or designated</u> conditions for the selected indicators

The indicator ranges and designated conditions establish appropriate operating ranges. The acceptability of these ranges has been documented by simultaneous completion of performance testing with reference test methods, in accordance with 40 CFR 64.4(c)

40 CFR 64.3(a)(3) - Design of indicator ranges

The indicator ranges and designated conditions are based on multiple levels relevant to high and low load operating conditions (40 CFR 64.3(a)(3)(i)). The indicator ranges and designated conditions incorporate operating ranges for the control device process variables ((40 CFR 64.3(a)(3)(ii))

PERFORMANCE CRITERIA - 40 CFR 60.43(B)

40 CFR 60.43(b)(1) - Obtaining representative data

The emission control device monitoring conducted is representative of the parameters being monitored over the range of Kipper Boiler operating conditions. Because scrubber water flow is fixed for a given pressure and nozzle orifice condition, monitoring scrubber water pressure is a suitable surrogate for scrubber water flow, provided nozzles are regularly maintained to ensure consistent nozzle discharge characteristics. As noted previously, the multi-clone and scrubber pressure drops are governed by maintaining proper combustion conditions in the Kipper Boiler combustion chamber; accordingly operating the Kipper Boiler within a specified steaming rate is also warranted.

40 CFR 60.43(b)(2) – Procedures for verifying operational status of new or modified monitoring equipment

None of the monitoring equipment is new or modified. Accordingly this provision is not applicable.

40 CFR 60.43(b)(3) - Quality Assurance and control procedures

No special quality assurance or control procedures are needed for the indicator ranges and designated conditions included in this monitoring design.

The Kipper Boiler emission limits subject to CAM rule monitoring are opacity and particulate concentration, both of which are based on hourly averaging. The emission control device indicator parameters proposed by BAF are collected at frequencies not exceeding one minute. Accordingly, the monitoring will provide rapid alerts to operators of the deviations from identified operating ranges.

EVALUATION FACTORS – 40 CFR 64.3(c)

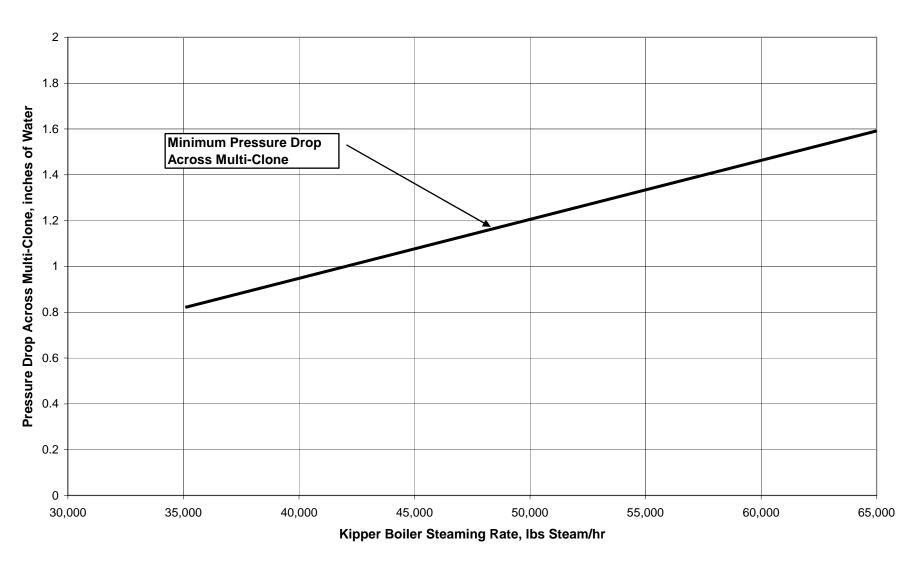
BAF has used site-specific factors in developing this monitoring design. The monitoring design uses existing monitoring equipment and procedures, the history of which demonstrates the ability of the monitoring to account for process and control device operational variability. The emission control device monitoring conducted also documents the reliability of the control technology.

Because pressure drop across the multi-clone and the wet scrubber cannot be manipulated independent of Kipper Boiler operating rate, site specific conditions limit evaluating the latitude built into the control technology. Accordingly BAF's control bounds are based on 20% variability from the value of the indicator parameters measured during emission control device monitoring. This factor is based on guidance provided by DEQ regarding acceptable operating envelopes for these types of equipment when only single point performance demonstrations are available.

SPECIAL CRITERIA FOR CEMS, COMS, OR PEMS – 40 CFR 60.43(D)

This section is not applicable.

Figure 1
Operating Control Chart for Minimum Pressure Drop Across Kipper Boiler Multi-Clone



BASIC AMERICAN FOODS

208-785-3200 Fax 208-785-8789

December 7, 2007

Mr. Zach Klotovich, P.E. Idaho Department of Environmental Quality 1410 North Hilton Boise, Idaho 83706

RE: Compliance Assurance Monitoring Design - Kipper Boiler; Rexburg Facility

Dear Mr. Klotovich,

Basic American Foods (BAF) is transmitting with this letter the requested additional information on the *Compliance Assurance Monitoring Design* for the Kipper Boiler at the Rexburg Facility. The attached document provides additional information on the monitoring design criteria and procedures BAF will use to comply with Compliance Assurance Monitoring (CAM) requirements for the Kipper Boiler. This information is submitted in response to a November 7, 2007 e-mail transmission on the *Kipper Boiler CAM Plan* from you to Bruce Wright of BAF.

If you have any questions in regards to this submittal, please contact me at 785-8572.

John S. Kirkpatrick, P.E.

Environmental Manager, Idaho Operations

Certification by Responsible Official:

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I, Nelson Rovig, certify based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Signature:

Date:

Nelson Rovig

Director, Idaho Operations

Attachment: Kipper CAM Response

CC: Coal Creek Environmental Associates - Stephen Nelson

DEQ - Idaho Falls Regional Office - Mr. Rensay Owen

ADDITIONAL INFORMATION ON COMPLIANCE ASSURANCE PROGRAM ELEMENTS FOR KIPPER BOILER - REXBURG FACILITY OF BASIC AMERICAN FOODS

The text below is suggested for inclusion in Section 7.4 of the Technical Basis Document for the draft Tier I permit for the Rexburg Facility of Basic American Foods.

The means or device to be used to measure the indicator(s) (such as temperature measurement device, visual observation, or CEMS.

The following devices are used to monitor the indicators

Steaming rate:

Pressure and temperature compensated orifice plate

Multiclone pressure drop:

Digital pressure gauges located upstream and downstream of the multiclones

Scrubber pressure drop:

Digital pressure gauges located upstream and downstream of the scrubber

Scrubber water pressure:

Manual pressure gauges located on the scrubber water supply header

Specifications that provide for obtaining data that are representative of the emissions or parameters being monitored

Steaming rate:

Orifice plate situated in steam header. Data acquisition system monitors pressure drop across the orifice plate, steam temperature, and steam pressure, and calculates steam rate from these parameters.

Multiclone pressure drop:

Digital pressure gauges are located upstream and downstream of the multiclones. Pressure drop is determined by the difference in reading between the gauges and is displayed on the boiler control system status screen. The sensitivity of the unit is ± 0.1 in. H_2O .

Scrubber pressure drop:

Digital pressure gauges are located upstream and downstream of the scrubber. Pressure drop is determined by the difference in reading between the gauges and is displayed on the boiler control system status screen. Data are manually recorded every two hours. The sensitivity of the unit is ± 0.1 in. H_2O .

Scrubber water pressure:

Manual (dial) pressure gauges located on the scrubber water supply header. Scrubber water pressure determined by direct observation of the gauge every two hours. The gauge can be read to about ± 0.5 psig.

ADDITIONAL INFORMATION ON COMPLIANCE ASSURANCE PROGRAM ELEMENTS FOR KIPPER BOILER REXBURG FACILITY OF BASIC AMERICAN FOODS

Quality assurance and control practices that are adequate to ensure the continuing validity of the data. The owner or operator shall consider manufacturer recommendations or requirements applicable to the monitoring in developing appropriate quality assurance and control practices.

· Steaming rate:

The steam recorder was calibrated when installed. There is no manufacturer recommended calibration schedule. BAF will inspect the orifice plate every other year to verify physical condition of the orifice plate and overall health of the transmitter system.

The overall performance of the transmitters will be checked every other year. The performance evaluation will include verifying overall transmitter health and conducing span checks of the entire loop.

Multiclone pressure drop:

Digital pressure have very little tendency to drift, and calibration is not needed. The overall performance of the transmitters will be checked every other year. The performance evaluation will include verifying overall transmitter health and conducing span checks of the entire loop.

Scrubber pressure drop:

Digital pressure have very little tendency to drift, and calibration is not needed. The overall performance of the transmitters will be checked every other year. The performance evaluation will include verifying overall transmitter health and conducing span checks of the entire loop.

Scrubber water pressure:

The pressure gauge reading will be compared with a second manual pressure gauge monthly. If the readings differ by more than 1 psig, troubleshooting will be initiated.

Specifications for the frequency of conducting the monitoring, the data collection procedures that will be used, and, if applicable, the period over which discrete data points will be averaged for the purpose of determining whether an excursion or exceedance has occurred.

Steaming rate:

Steam production is recorded and totalized continuously, and the steam production is recorded hourly. The hourly steam values are summed to provide a 24-hour total. The daily average steam rate is obtained by dividing the 24-hour total by 24.

Multiclone pressure drop:

Data are manually recorded every two hours in the boiler operating log.

Scrubber pressure drop:

Data are manually recorded every two hours in the boiler operating log.

Scrubber water pressure:

Data are manually recorded every two hours in the boiler operating log.

ADDENDUM TO PROPOSED COMPLIANCE ASSURANCE MONITORING PROGRAM KIPPER BOILER AT REXBURG FACILITYBASIC AMERICAN FOODS

The following information is submitted as an addendum to the Basic American Foods (BAF) Compliance Assurance Program for the Kipper Boiler at the Rexburg Facility of BAF. This submittal includes:

- A proposed maximum pressure drop for the Kipper Boiler multi-clones.
- Alternate monitoring for scrubber performance, replacing scrubber pressure drop with minimum scrubber downstream static pressure and the combination of maintaining negative static pressure in the firebox with an induced draft fan speed setting of less than 100 percent.

MULTI-CLONE PRESSURE DROP

Maximum pressure drop across multi-clone

Excessive pressure drop across the multi-clone could occur if the multi-clones became plugged and began to fill with solids. Because BAF is not aware of any circumstances in which the multi-clones have plugged, no direct data are available regarding multi-clone pressure drops associated with plugging. In the past BAF has operated the multi-clones with pressure drops as great as 4.5 inches water column. Accordingly, BAF proposes a maximum acceptable pressure drop across the multi-clones of 5 inches water column.

SCRUBBER PERFORMANCE

Because the rods in the scrubber are not-adjustable, pressure drop across the scrubber is a function of airflow through the scrubber. The pressure drop across the scrubber for a given airflow rate is also influenced by solids accumulations in the scrubber and the demister plates. Compliance assurance monitoring for the scrubber thus addresses both scrubber air flow and the accumulation of solid materials in the scrubber and demister.

Scrubber Operating Parameters

Scrubber Downstream Static Pressure

Because scrubber particulate removal efficiency is related to the energy expended mixing the water droplets with the air stream, a minimum energy loss must be maintained across the scrubber. The scrubber rods in the Kipper Boiler scrubber are fixed in location (i.e., not adjustable). Accordingly pressure drop across the Kipper boiler scrubber is a function of airflow.

There is no mechanical equipment between the scrubber and the stack outlet. Thus, the static pressure downstream of the scrubber indicates total airflow across the scrubber, and

maintaining a minimum scrubber downstream static pressure assures adequate airflow (and hence pressure drop) across the scrubber.

During the emissions control performance monitoring the average scrubber downstream static pressure was 7.0 inches of water column at both high and low firing rates. This indicates that under current physical arrangements, the scrubber downstream static pressure is not sensitive to steaming rates. Accordingly, minimum scrubber downstream static pressure is established at 5.6 inches of water column, which is 80 percent of the pressure recorded during the emissions control performance monitoring.

Combination of Firebox Static Pressure and Induced Draft Fan Motor Speed Setting

Solids accumulation in the scrubber and demisters can influence airflow across the scrubber. To assure reliability of the scrubber downstream static pressure a control parameter is needed to monitor solids accumulation in the scrubber and demisters.

For efficient combustion, the firebox is operated under slightly negative static pressure, typically -0.05 inches water column. This condition is maintained by adjusting the speed of the induced draft fan; as firebox pressure increases the induced draft fan speed is increased to compensate.

During boiler operation, solids deposit on the scrubber rods and, occasionally, the demister plates. As the solids deposits accumulate, air flow resistance increases in the scrubber and demister. This requires that the induced draft fan speed setting be increased to maintain the negative static pressure in the firebox. Excessive solids accumulation is indicated when the firebox can no longer be maintained under negative pressure with the induced draft fan at maximum speed. When this condition occurs, the Kipper boiler will be removed from service and accumulated solids will be removed from the scrubber and demisters.

MONITORING DESIGN CRITERIA

Monitoring design criteria fro scrubber operation are summarized below:

| | Scrubber Downstream Static Pressure | Combination of Firebox Static Pressure and Induced Draft Fan Speed Setting |
|-------------------------|--|--|
| Measurement Approach | The scrubber downstream static pressure is measured using a digital pressure gauge in the scrubber throat downstream of the scrubber rods. | The firebox static pressure is measured using a digital pressure gauge tapped into the firebox. The induced draft fan speed setting is measured directly from the speed control setting for the fan. |

| Indicator Range | An excursion is defined as a scrubber downstream static pressure that is less than 5.6 inches of water column. | An excursion is defined as any time the induced draft fan goes to 100% speed and is unable to maintain a negative pressure in the firebox. |
|--|---|---|
| Data Representativeness | The scrubber downstream static pressure monitor is located downstream of the scrubber rods. The sensitivity is ± 0.1 inches of water column. | The firebox static pressure monitor is tapped into the firebox. The sensitivity is ± 0.01 inches of water column. The fan speed is recorded directly from the boiler control system and is recorded to the nearest 0.1 %. |
| B. Verification of Operation Status | Not applicable | Not applicable |
| QA/QC Practices and Criteria | Digital pressure drop monitors have very little tendency to drift and calibration is not needed. The performance of the transmitters will be checked every other year and will include conducting span checks of the entire loop. | Digital pressure drop monitors have very little tendency to drift and calibration is not needed. The performance of the transmitters will be checked every other year and will include conducting span checks of the entire loop. |
| | | The induced draft fan speed setting does not require a calibration. |
| Monitoring Frequency | Recorded every two hours. | Recorded every two hours. |
| Data Collection Procedures | Manually recorded in the boiler log. | Manually recorded in the boiler log. |
| Averaging Period | Not to be exceeded any time. | Not to be exceeded any time. |